628.16
Il63r

ILLINOIS RIVER POLLUTION COMMISSION

REPORT TO THE
67TH GENERAL ASSEMBLY
OF THE
STATE OF ILLINOIS

CENTRAL CIRCULATION BOOKSTACKS

The person charging this material is responsible for its renewal or its return to the library from which it was borrowed on or before the **Latest Date** stamped below. **You may be charged a minimum fee of $75.00 for each lost book.**

Theft, mutilation, and underlining of books are reasons for disciplinary action and may result in dismissal from the University.

TO RENEW CALL TELEPHONE CENTER, 333-8400

UNIVERSITY OF ILLINOIS LIBRARY AT URBANA-CHAMPAIGN

MAR 23 1999

DEC 17 1998

When renewing by phone, write new due date below previous due date.

L162

628.16
Il63r

List of Members of the Illinois River Pollution Commission

Officers

Honorable Stanley J. Mondala, *Chairman*
Honorable Robert L. Burhans, *Vice Chairman*
Honorable C. R. Ratcliffe, *Secretary*

Members of the Senate

Honorable Simon E. Lantz, Congerville
Honorable Arthur E. Larson, Chicago
Honorable Stanley J. Mondala, Chicago

Members of the House of Representatives

Honorable Robert L. Burhans, Peoria
Honorable James D. Carrigan, Peoria
Honorable C. R. Ratcliffe, Beardstown

Members Appointed by the Governor

Mr. Ernie Giesler, Golden Eagle
Mr. Cort Severns, Peoria

Chief Sanitary Engineer, Department of Public Health

Mr. C. W. Klassen, Springfield

JUN 4 '54 MARSHALL

Table Of Contents

Members of the Illinois River Pollution Commission 1

Letter of Transmittal 3

Authority and Preface to Report 4

Acknowledgements 5

Summary of Investigations 5

Introduction 6

- 1) Description of the Illinois River Basin 6
- 2) Definition of Pollution 7
- 3) History of Illinois River Pollution 8
- 4) Past Pollution Studies of the Illinois River 8
- 5) Existing Conditions and Damages 8
- 6) Effects of Pollution 10
- 7) Status of Illinois River Pollution 11

Conclusions and Recommendations 16

- Conclusion I 16
- Conclusion II 17
- Conclusion III 17
- Conclusion IV 19
- Conclusion V 19
- Conclusion VI 20
- Conclusion VII 21

SENATORS
Simon E. Lantz
Congerville, Illinois
Arthur E. Larson
6230 S. Ashland Ave.
Chicago, Illinois
Stanley J. Mondala
1123 N. Milwaukee Ave.
Chicago, Illinois

REPRESENTATIVES
Robert L. Burhans
511 Columbia Terrace
Peoria, Illinois
James D. Carrigan
3 Southgate Road
Peoria, Illinois
C. R. Ratcliffe
1407 Jefferson St.
Beardstown, Illinois

STATE OF ILLINOIS
ILLINOIS RIVER POLLUTION COMMISSION
600 CAPITOL BUILDING
SPRINGFIELD

APPOINTED BY
THE GOVERNOR
Ernie Giesler
Golden Eagle, Illinois
Cort Severns
909 Rock Island Ave.
Peoria, Illinois

C. W. Klassen
Chief Sanitary Engineer
State of Illinois

STANLEY J. MONDALA, *Chairman*
ROBERT L. BURHANS, *Vice-Chairman*
C. R. RATCLIFFE, *Secretary*

January 30, 1951

The Honorable Adlai E. Stevenson
Governor of Illinois, and
The Honorable, The Members of the
Sixty-Seventh General Assembly
State of Illinois
Springfield, Illinois

Dear Sirs:

We have the honor of transmitting herewith our "Report of Investigation of Illinois River Water Pollution." This report is made pursuant to the provisions of House Bill 603, passed by the Sixty-Sixth General Assembly and approved on July 12, 1949.

Respectfully submitted,

The Illinois River Pollution Commission

By Stanley J. Mondala

Stanley J. Mondala, Chairman

Attested by:
C. R. Ratcliffe
C. R. Ratcliffe, Secretary

AUTHORITY AND PREFACE

Authority for Commission

House Bill No. 603 (approved July 12, 1949). An Act creating a Commission to study the problems of water pollution in the Illinois River, prescribing its powers and duties, and making an appropriation therefor.

Be it enacted by the People of the State of Illinois represented in the General Assembly:

Section 1. There is created a Commission to study the problems of water pollution in the Illinois River. The Commission shall consist of three members of the Senate appointed by the President pro tempore, three members of the House of Representatives appointed by the Speaker, the chief sanitary engineer of the Department of Public Health, and two citizens of the State appointed by the Governor, one of whom shall be a member of an Illinois sportsmen's association and the other of whom shall be a commercial fisherman. The Commission shall select from its membership a chairman and such other officers as it deems necessary. Members of the Commission shall serve without compensation, but shall be reimbursed for actual and necessary expenses.

Section 2. The Commission shall investigate the extent and cause of the pollution of the Illinois River and shall study means of decreasing or eliminating such pollution.

Section 3. In the conduct of its investigation, the Commission may conduct hearings and compel by subpoena the attendance and testimony of witnesses and the production of relevant books, records, papers and other memoranda.

Section 4. The Commission may employ and fix the compensation of such assistants as it deems necessary.

Section 5. The Commission shall submit a report of its investigation and findings, together with any recommendations for legislation, to the regular session of the Sixty-Seventh General Assembly.

Section 6. The sum of $25,000, or so much thereof as may be necessary, is appropriated to the Commission for the purpose of carrying out its duties under this Act.

Formation of Illinois River Pollution Commission

Senator Wallace Thompson, President pro tempore of the Senate of the Sixty-Sixth General Assembly, named as Senate members to the Commission: Senators Simon E. Lantz, Arthur E. Larson, and Stanley J. Mondala.

Speaker Paul Powell of the House of Representatives of the Sixty-Sixth General Assembly appointed the following Representatives in the General Assembly as members: Robert L. Burhans, James D. Carrigan, C. R. Ratcliffe.

Governor Adlai E. Stevenson appointed the following two citizens to membership:

Ernest Giesler, Golden Eagle, Illinois, and Cort Severns, 909 Rock Island Avenue, Peoria, Illinois.

C. W. Klassen, the Chief Sanitary Engineer of the State of Illinois, Department of Public Health, under the terms of the bill automatically becomes a member of the Commission.

ACKNOWLEDGEMENTS

The Commission has benefited from the cooperation and assistance of many different organizations and individuals in the conduct of its investigation. It wishes to take this means of formally acknowledging this help, and also wishes to extend its thanks to all those who furnished the Commission with information and suggestions and who facilitated its work in other ways. It is virtually impossible to list the names of all who rendered such assistance, but prominent among them are those mentioned in the following paragraphs.

Considerable assistance and valuable information was furnished to the Commission by several state government agencies. The cooperation of the State Sanitary Water Board and the State Department of Public Health in conducting the field survey of the Illinois River in the Summer of 1950 is sincerely appreciated, as is the assistance of the State Department of Conservation on this survey. The cooperation of the U. S. Public Health Service in allowing the loan of the mobile laboratory to the Sanitary Water Board for this survey is also appreciated. The report of this survey has been valuable to the Commission in its deliberations. Detailed information and reports were furnished at the Commission's request by the following state agencies: Illinois Legislative Council; State Department of Conservation; State Geological Survey; State Natural History Survey; State Sanitary Water Board; Soil Conservation Districts Board; and State Water Survey.

Other agencies furnishing detailed information and reports were: Chicago District, Corps of Engineers, U. S. Army; Illinois Fisheries Council; Libby-Owens-Ford Glass Company (Ottawa plant); Sanitary District of Chicago; and State of Indiana, Stream Pollution Control Board. Their assistance is also gratefully acknowledged.

The helpful advice and assistance furnished by the many municipal officials, industry representatives, chambers of commerce, sportsmen's representatives, and other organizations and individuals, have also been most helpful to this Commission.

Conduct of Investigations by Illinois River Pollution Commission

This report of the Illinois River Pollution Commission is made pursuant to the provisions of an Act of the Sixty-Sixth General Assembly of the State of Illinois (House Bill 603, approved July 12, 1947), a copy of which is reproduced herein. The Commission organization meeting was held December 5, 1949. and the Commission proceeded to hold preliminary discussions relating to the planning of its own studies and inquiries.

As a result of these discussions the Commission decided: (1) to hold hearings at selected places within the Illinois River drainage basin at which those interested in the stream pollution problem would be invited to present facts and suggestions; (2) to have a survey conducted of the Illinois River which would obtain up-to-date technical data on the water quality of the Illinois River and would more clearly define the present problems and possible future investigations and needs which may require action by the Commission in accordance with the duties charged to it by the Sixty-Sixth General Assembly; (3) to prepare its own report to the General Assembly in the light of all the information received.

The minutes of hearings held by the Commission are included as Appendix A to this report. The Illinois Sanitary Water Board consented to conduct a survey and to furnish the data and a report of its findings for the use of the Commission. This report is included as an appendix to the testimony of the Sanitary Water Board, Appendix L, to this report. The Commission members wish to express their appreciation to the Sanitary Water Board for its assistance in this regard. Separate acknowledgement is made at an earlier point herein of the assistance received from the many individuals and organizations during the course of its work.

INTRODUCTION

This report of the Illinois River Pollution Commission is made pursuant to the provisions of an Act of the Sixty-Sixth General Assembly of the State of Illinois (House Bill 603, approved July 12, 1949, a copy of which is reproduced herein.) The Commission was organized late in 1949.

Its study was based on a realization that the effects of pollution touch the life of every person through recreation, business, social, economic, financial and daily living conditions. The Commission secured its facts first-hand, in a series of public hearings held in communities along the Illinois river from Chicago to Grafton. Meetings were also held in conjunction with the setting up of the mobile laboratory testing unit at scores of communities along the river.

Special acknowledgement is made earlier in this report of the assistance received from various technical agencies in the preparation of this report.

On the basis of the information made available to it and developed through its own investigations and inquiries, the Commission has reached certain conclusions and recommendations. These are presented under appropriate headings. A special effort has been made to shorten this presentation as much as possible.

> Note: The comprehensive reports of all consultants are printed separately, and reference to the more detailed discussions may be made in the full report submitted to the Sixty-Seventh General Assembly.

In order to evaluate properly the problems, activities, conclusions and recommendations of this Commission, it is necessary to appreciate fully several principles which stand out as a result of the Commission's work.

Of extreme importance is the fact that the water resources of the Illinois River basin are vital to its growth and development. The problems of this river basin are not sectional, but for the most part reflect those of the entire state. With the expansion of industry and municipal development, there must be an equitable use, and certainly not a misuse, of these valuable water resources.

Furthermore, since the surface waters of this basin are public property, it is increasingly important that the people know how this property is being utilized. Pollution caused by municipal and industrial wastes is not just a problem of public health, nor of fish and wildlife conservation, nor of agriculture, industry or navigation. Rather, it is the combined problem of all these interests, and cannot be solved by considering them separately. All should be represented in any state agency which deals with pollution prevention, abatement and control.

Finally, pollution control must be recognized as a dollars-and-cents investment in one of the state's most vital resources. Funds made available for this activity should be measured in terms of its importance.

Description of the Illinois River Basin

A description of the Illinois River basin serves to emphasize its importance to the state, its potentialities, and the interwoven pollution problems resulting from its growth of industrial and municipal development.

The Illinois River, formed by the junction of the DesPlaines and Kankakee Rivers, flows 273 miles through mid-central Illinois, entirely within the state, and draining approximately one-half of the state's entire area. In this basin live more than six million persons, three-fourths of the state's population.

The climate and geography of the basin particularly suit it to temperate zone crops, especially grains. Its geology likewise suits it to the development of ground water supplies and furnishes a firm foundation on which agriculture may flourish.

These natural resources have been and can be equally important in Illinois' industrial development. The river has an average daily runoff of some 10,000 million gallons, of which one-fourth is diversion and used water from Chicago. The valley transmits enough surface water to serve approximately 30 million persons and gets an average yearly rainfall of 36.79 inches.

The waters of the Illinois and its tributaries are used for a variety of domestic and industrial purposes, with the main stream increasingly important as an artery of commerce.

While the lower portion of the river basin is still used extensively as a commercial fishery, the influences of leveeing and pollution have cut sharply into what was formerly one of the nation's most important fisheries. Today game fishing is virtually non-existent on the river, although some of the bottomland lakes and tributaries are still fished.

Definition of Pollution

Practically speaking, "pollution" is a relative term. It is objectionable in relation to the intended uses of a stream. Any material, organic or inorganic, that is discharged into a stream and makes the water unfit for its reasonable intended uses can be termed pollution.

Water has its source in rainfall, which is pure both chemically and bacterially. In its contact with the land, however, it picks up impurities, the character of which depends on the material with which the water has come in contact. The nearer we approach the water's original pure state, either by preventing pollution or by removing the polluting material through construction and use of treatment facilities, the more costly the job becomes. Obviously, the cleaner the water is made in this purification process, the higher the cost, and thus the close association of finances and the relative effect of pollution.

Pollution comes from three main sources:

1) Natural pollution — that which exists regardless of the presence of man or his activities. Land erosion is one of the most damaging natural pollutants, both in injury to the stream and in loss of valuable top soil. Erosion in the Illinois River valley during the century it has been farmed has contributed a heavy silt load to the stream. This has caused direct damage to fish and aquatic life and threatens the ground water supplies along its banks.

2) Human wastes—these vary in effect from the minor one in rural areas to a major problem in the large communities. Urban development in the past several decades has made the problem acute. Discharge of untreated sewage into a stream will cause pollution which varies according to the amount of the sewage and the amount of water flow available to assimilate the pollution load.

Most important of the factors in this type of pollution is the danger to public health through disease-producing organisms.

3) Industrial wastes—these consist of (a) organic pollutants like the process wastes of milk-products plants, distilleries, breweries, food canneries, meat packing plants and similar operations; (b) toxic pollutants such as wastes from steel mills, coke and gas plants, oil refineries and chemical manufacturing; and (c) inert wastes including lime sludge from water-softening plants, washings from gravel pits, oil from refining processes, and sawdust from saw mills.

All of these are potential sources of pollution to the Illinois River.

History of Illinois River Pollution

Stream pollution, wherever it exists, is the same story—communities developing and disposing of their wastes in the cheapest manner by discharging to the nearest watercourse, usually to the detriment of the downstream residents. The Illinois River is typical of this story, only it is magnified many times because of the large concentrations of population and industry.

Since the degree of organic pollution depends on population density, the Chicago area created the outstanding problem. However, other communities have contributed to stream pollution.

Chicago's first sewers, built in 1856, drained into Lake Michigan. Completion of the Main Drainage canal in 1900 provided an outlet to the Illinois River for water-diluted sewage removal from the city. When the U. S. Supreme Court restricted the amount of water to be diverted from Lake Michigan, sewage treatment became necessary. Construction of four treatment plants—North Side, Calumet, West Side and Southwest—was begun in 1920, but full operation of all four works was not under way until the fall of 1950. Obviously, serious pollution at least of the upper river resulted from these inadequate treatment facilities.

Downstream from the boundary of the Chicago Sanitary District to Grafton, the Illinois River proper has a sewer-connected population of more than 300,000 persons. Industrial wastes, if discharged to the river untreated, would amount to the domestic sewage from 4,000,000 persons.

Thus the river is staggered by a terrific burden upstream and assimilation of that waste is hampered by additional pollution contributed along its entire course.

Table 1 on Page 9 shows the comparison between domestic and industrial wastes and the amount of actual waste that reaches the river.

Additionally, the bottling up of the Illinois River, through a short-sighted and extreme land reclamation policy, has contributed to the total pollution problem. Extensive leveeing of the former flood plain of the River has decreased its capacity for assimilating wastes and has resulted in higher and higher flood stages. These factors are at least as destructive as actual stream pollution.

Past Pollution Studies of the Illinois River

The Illinois River has probably contributed more knowledge to the field of stream pollution than any other river in this country.

The Illinois Board of Health was among the first to consider Illinois River pollution in its studies of 1879. Since that time, vast detailed data have been compiled, especially by the technical staff of the Sanitary District of Chicago, which has had practically continuous survey work under way along the upper Illinois River for more than a quarter century.

Many of the past pollution studies were academic in nature and usually referred to a specific phase of the problem. This Commission sponsored its own survey in 1950, through the cooperation of the State Sanitary Water Board, and for the first time an attempt was made to correlate and evaluate the various phases and their relative importance in the field of pollution control and abatement.

Existing Conditions and Damages

The Illinois River is subject to all of the three general types of pollution.

Of the natural pollutants the most damaging is the silt washed from agricultural land by soil erosion. It is estimated that enough silt from the uplands of the Illinois valley settles into the River to raise the entire valley floor one foot every 70 years. This is exclusive of the great amount of silt which is retained in the

TABLE I

POLLUTION DATA—ILLINOIS RIVER
YEAR 1950

Municipality	Population Equivalent*				Status Domestic Sewage Treatment
	Domestic Sewage Potential	Industrial Waste Potential	Total Potential	Present Discharge to River	
Chicago Sanitary District	4,316,590	2,949,010	7,265,600	695,000	Complete
Lemont	2,557	16,200	18,757	18,757	None
Lockport	3,475	51,000	54,475	54,475	None
Joliet	80,000	88,500	168,500	162,500	None
Rockdale	1,532	....	1,532	150	Complete
Morris	6,145	11,000	17,145	11,845	None
Seneca	1,235	....	1,235	800	Primary
Marseilles	4,455	30,100	34,555	33,000	Primary
Ottawa	16,942	....	16,942	16,942	None
North Utica	1,019	....	1,019	660	Primary
LaSalle	12,023	....	12,023	12,023	None
Peru	8,983	....	8,983	5,840	Primary
Spring Valley	4,914	....	4,914	4,914	None
DePue	2,296	....	2,296	1,490	Primary
Henry	....	....	....	....	None
Lacon	....	380	380	380	None
Chillicothe	....	....	....	....	None
Peoria Sanitary District	116,877	2,579,630	2,696,507	287,000	Complete
East Peoria	6,806	....	6,806	4,420	Primary
Creve Coeur	....	....	....	....	None
Marquette Heights	....	....	....	....	U. C.
Pekin	21,864	1,108,000	1,129,864	155,300	Primary
Havana	3,999	....	3,999	2,600	Primary
Beardstown	6,505	....	6,505	6,505	None
Hardin	838	....	838	545	Primary
Grafton	1,110	....	1,110	720	Primary
TOTAL	4,620,165	6,833,820	11,453,985	1,466,866	

Per cent pollution removed from river — $$\frac{9,987,119}{11,453,985} = 87.2$$

---

*One population equivalent is the amount of organic material in either domestic sewage or industrial waste which would normally be present in the sewage from one person during one day.

valleys of the tributary streams, and also that which is washed out of the Illinois River into the Mississippi River.

A striking example of the effect of soil erosion in the Illinois River basin was presented during this Commission's survey at Havana. The silt carried by the river at that point was equivalent to the daily removal of one inch of top soil from 360 acres of land.

It is estimated that soil erosion adds nearly a thousand times more solids to the river than do the human wastes which are discharged to it. Contrary to the popular conception, not all of this erosion comes from steep lands, but a great share of it is the result of sheet erosion of comparatively level farm land under intense cultivation.

Major sources of human pollution in the Illinois River are the communities along the river, especially those large enough to have some form of sewer system. (The effect of untreated human sewage from rural areas and small communities—those under 500 population—is considered negligible.)

The Sanitary Water Board lists 225 sewer-served communities in the basin, with 77 percent of the communities and 97 percent of the population served by sewage treatment works. On the main stream of the Illinois River, 77.7 percent of the population is served by treatment works, while the tributary streams show the following:

DesPlaines River, 97.8 percent; Kankakee River, 74.3 percent; Aux Sable River, 0 percent; Fox River, 98.7 percent; Vermilion River, 66.3 percent; Farm Creek, 0 percent; Mackinaw River, 0 percent; Macoupin Creek, 62 percent. The other tributary streams have treatment works for 100 percent of the sewered population.

Great diversity of industry in the Illinois River basin creates a wide variety of industrial wastes. Most serious potential sources are the fermentation and meat-packing industries, centered respectively in the Peoria-Pekin and Chicago areas. However, many other types of industry contribute to the total industrial waste potential, which is estimated to exceed the human sewage problem by 75 percent. Judging by the residual wastes discharged to the stream, other areas as well are rapidly approaching the danger point.

A staggering domestic and industrial waste load is discharged to the River, even though sewage treatment works and industrial recovery processes remove 87.2 percent of this material. The amount which actually reaches the River is equivalent to the raw sewage of one and a half million persons.

Effects of Pollution

Pollution is a potential danger to public health, but its intensity cannot be fully appreciated on the basis of data now available. This should not lead to the false conclusion that no hazard exists.

In addition to the measurable bacterial pollution which is present, there is increasing reason to believe the waters may contain substances poisonous to man and animals for which there are not, at present, readily usable standards or indicators.

The Commission's 1950 survey, however, did find conditions in the upper river that indicate the presence of materials which are poisonous to the organisms found normally. More investigation of this type of pollution is vitally needed.

Fortunately, public water supplies have not been damaged by pollution of the Illinois River since, with the exception of Grafton, most communities use ground water supplies. The location of these ground water sources is such that even heavy pollution of the water would not directly damage them. However, while there is no direct problem of polluted public water supplies, there is a serious water supply problem. The constant deposit of sediment along the stream bottom seals off the water which would normally seep into and replenish the ground water formations.

The large amount of suspended material in the river water has damaged it for industrial use, since high turbidity impairs its value in many industrial processes. Here, too, the threat to ground water supplies is a serious one, because the industry located along the Illinois River depends heavily on the available ground water for its existence and continued development. This problem is already acute in the Peoria area.

Sediment has also damaged navigation and electric power installations along the Illinois River, although the actual monetary losses have not been estimated.

Perhaps the most noticeable effects of pollution of the Illinois River are the damages to aquatic recreational facilities. At no point is the river considered safe for swimming. Except in the extreme lower reaches, it has no value for game fishing—this despite the river's once fine national reputation for fishing and waterfowl hunting. Thus, millions of dollars are spent annually by Illinoisans in those neighboring states which offer good aquatic recreational facilities.

Similarly, pollution and sedimentation have severely curtailed the river's commercial fishing industry, once out-ranked only by the Great Lakes and the salmon industry of the Pacific Northwest. Recent surveys show no fishery in operation above the Starved Rock dam, with little fishing being done between Starved Rock and Peoria. Complaints indicate that chemical pollution of the upper river has caused objectionable flavors in fish, making them unsalable.

Status of Illinois River Pollution

Silting of the Illinois River and its tributaries is a major factor in the pollution problem. The Soil Conservation Service estimates that soil losses from very moderate slopes in the Illinois valley range from one to five tons per acre every year, with much higher losses from steep lands under cultivation. The sediment and erosion damage amounts to millions of dollars annually. While considerable damage is done by the eroded soil to such installations as reservoirs, highways, railroads, water-treatment plants and drainage developments, the real loss is to the land owner from whose property the soil is eroded. The cost of erosion to farm lands is astronomical.

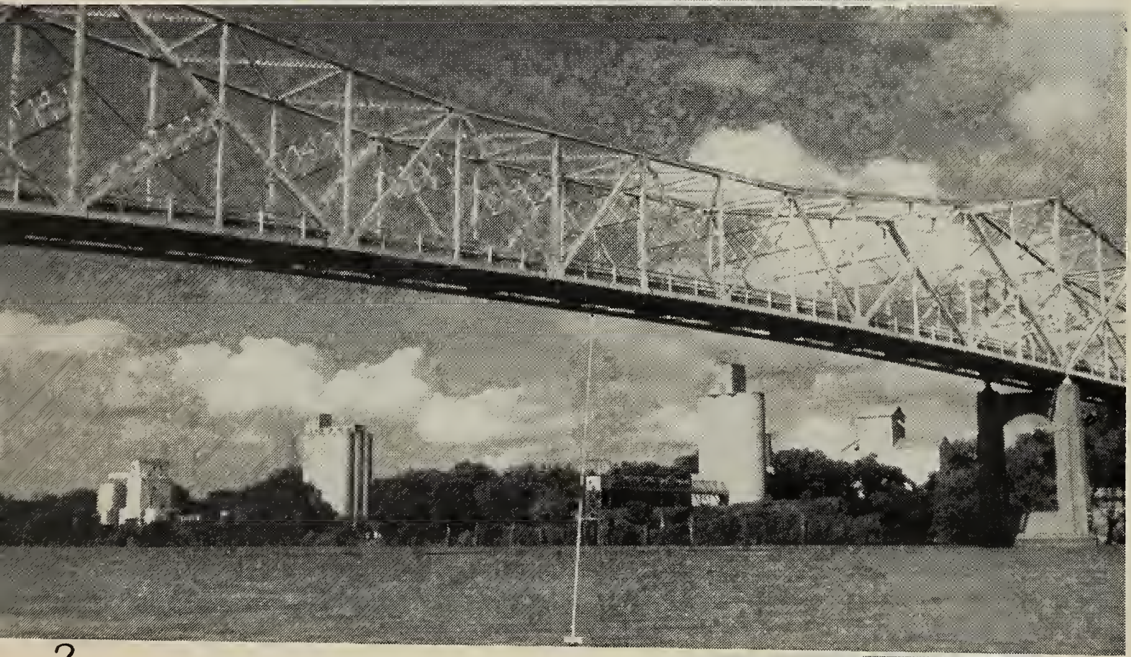
Since this is primarily an agricultural problem, its solution requires all possible encouragement to land use practices which will reduce erosion. The State Soil Conservation Districts Board reports marked progress in this direction with its voluntary soil conservation program. However, land use practices which will reduce erosion must be much more widely employed before real success can be claimed in this phase of the problem.

As to pollution from domestic and industrial sources, the Sanitary District of Chicago has an excellent record of river conditions between Lockport and Pekin over a period of years. However, little recent information is available on the conditions below Pekin with the exception of the survey conducted during 1950 for this Commission.

Since this survey was of short duration, it does not furnish complete data covering the annual variation due to climatic and river flow conditions. Unfortunately also, this survey was made during a period of high stream flows along the lower river and therefore does not indicate the conditions which might prevail during periods of low or critical stream flow. Additional information is needed, particularly on the lower river, to determine definitely the status of river pollution. Adequate personnel and equipment will have to be made available

LIBRARY
UNIVERSITY OF ILLINOIS

1



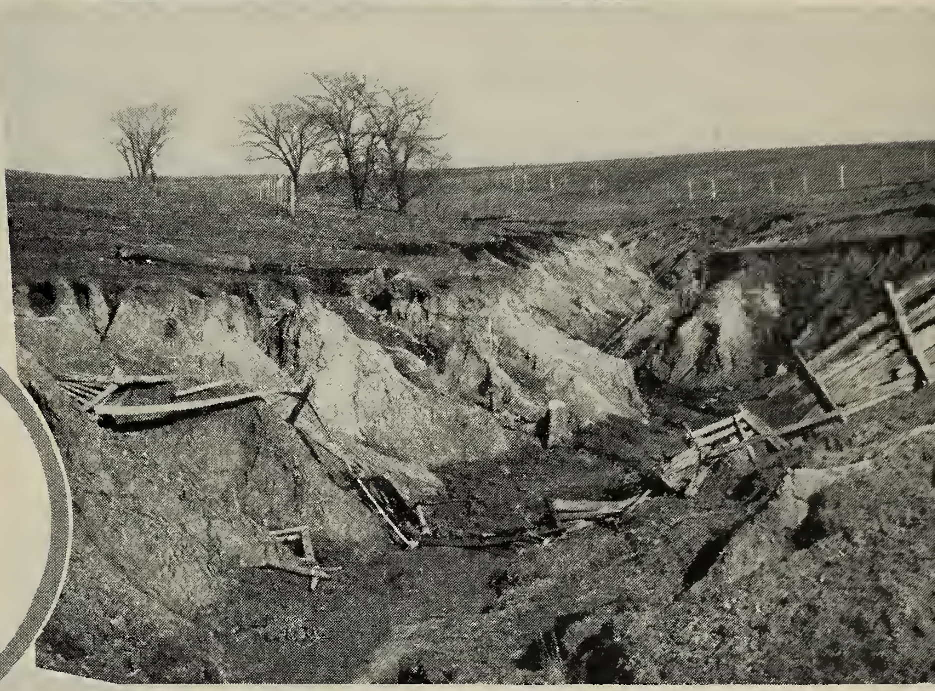
2

3

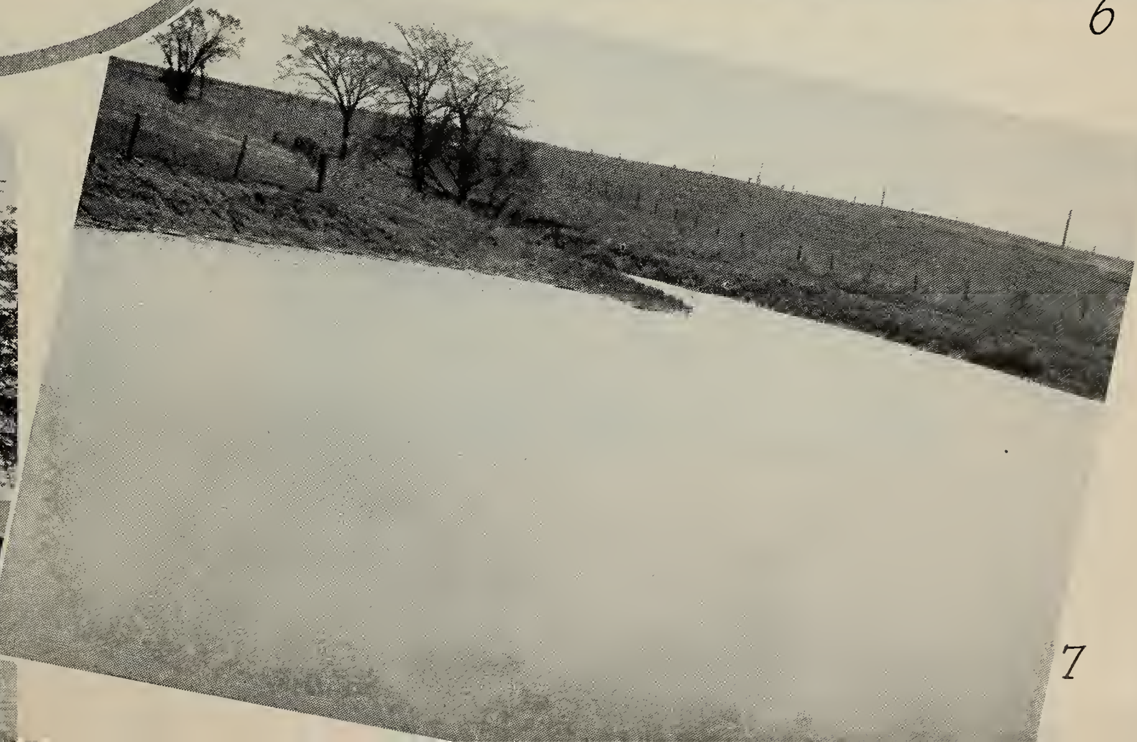
4

5

1—Boating on the Illinois River.
2—Technicians get water samples from bridge.
3—Laboratory crew lands sampling equipment.
4—Mobile laboratory at Chicago Fair—1950.
5—Barges using Illinois River.
6—Farm scene showing uncontrolled soil erosion.
7—Same scene after erosion has been controlled.



6



7

to the Sanitary Water Board if this badly needed data is to be secured.

Sewage treatment of some sort is available to 4,686,207 of the 5,021,299 residents of Illinois River basin communities. Of these, 4,598,870 persons in 173 communities have sewers with complete treatment facilities. An additional 87,337 persons in 23 communities have sewers with primary sewage treatment facilities. The remaining 144,459 residents of 29 communities have sewers but no treatment facilities. (Another 190,633 persons in 55 communities have public water supply facilities but no public sewers.)

Primary treatment consists merely in removing the bulk of the solids which will settle from sewage. This may be compared with complete treatment, which not only removes the solids but also removes, biochemically, a large portion of the suspended solids and the dissolved solids represented by the organic matter present. Normally efficient primary treatment processes remove 30 to 35 percent of the pollutional material present. Complete treatment processes remove 85 to 90 percent of the pollutional material.

Present information indicates that the human waste load which reaches the streams of the Illinois River Basin—even after treatment in the great majority of the communities as indicated above—is equivalent to the raw sewage from more than one million persons. Since no treatment process is 100 percent efficient, even the most favorable conditions will result in an appreciable waste load.

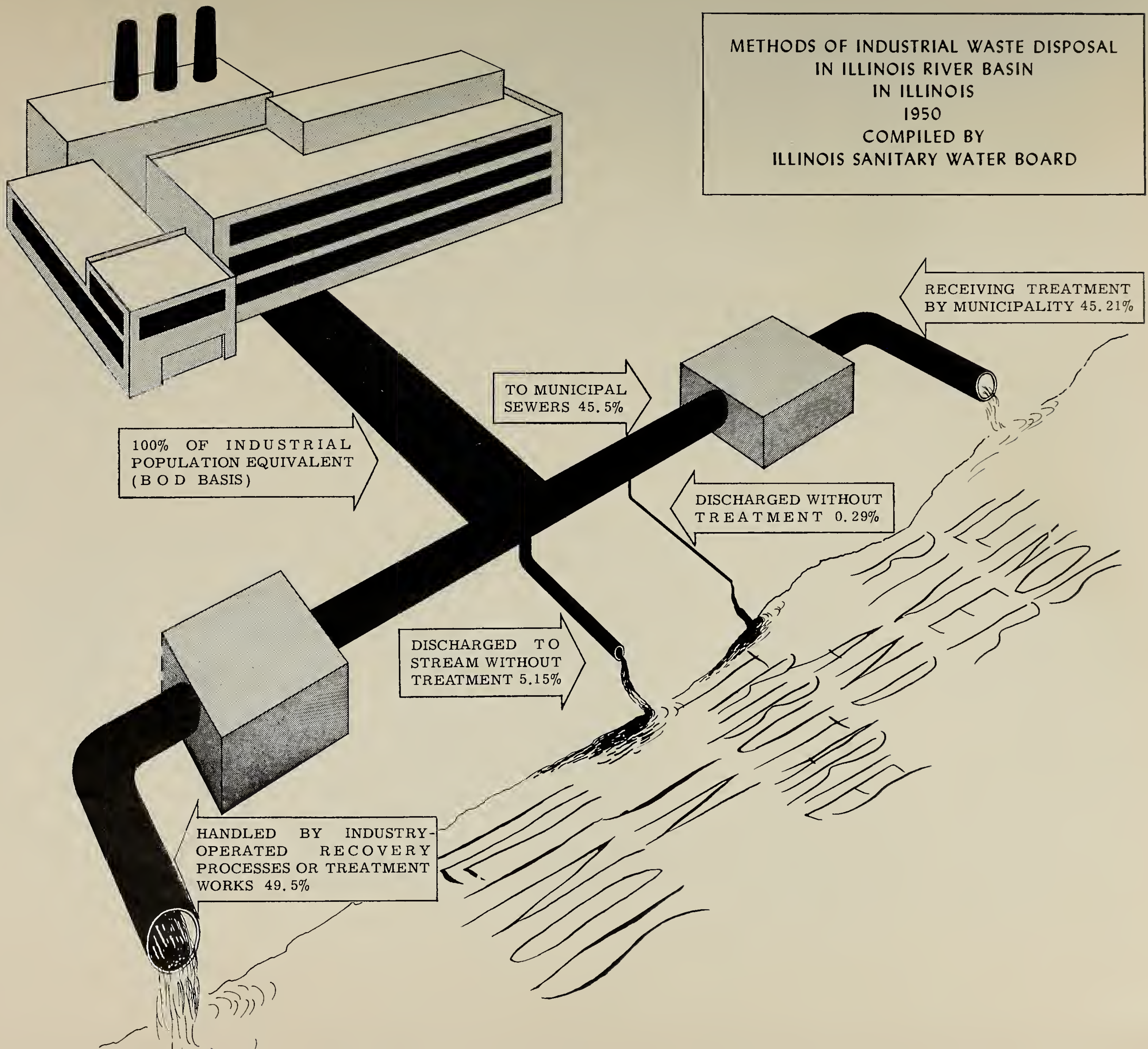
While considerable progress in waste disposal has been made by industry in the Illinois River basin, the industrial waste load now discharged to the streams is estimated at the equivalent of domestic sewage from 1,900,000 persons—roughly twice that of the human waste. This is a notable reduction of the potential load from industry—it could equal the sewage of 8,500,000 persons—but a sizeable amount is still reaching the streams. Further pollution abatement in this field will depend on study of the special problems of industrial waste disposal.

It is on this picture of the overall pollution problem that the Commission has based its recommendations.

Crew members of the Commission's Mobile Laboratory unit collecting bottom samples from the Illinois River.

METHODS OF INDUSTRIAL WASTE DISPOSAL
IN ILLINOIS RIVER BASIN
IN ILLINOIS
1950

COMPILED BY
ILLINOIS SANITARY WATER BOARD


100% OF INDUSTRIAL POPULATION EQUIVALENT (B O D BASIS)
TO MUNICIPAL SEWERS 45.5%
RECEIVING TREATMENT BY MUNICIPALITY 45.21%
DISCHARGED WITHOUT TREATMENT 0.29%
DISCHARGED TO STREAM WITHOUT TREATMENT 5.15%
HANDLED BY INDUSTRY-OPERATED RECOVERY PROCESSES OR TREATMENT WORKS 49.5%
ILLINOIS RIVER AND TRIBUTARIES IN ILLINOIS

CONCLUSIONS AND RECOMMENDATIONS

The Commission presents the following as its conclusions and recommendations. These are based on the testimony summarized earlier in this report and are submitted with a discussion of the various specific proposals recommended.

Conclusion I

Study of Illinois statutes relating to water-pollution control clearly indicates a need for more effective and centralized pollution control administration.

Discussion I

Present water-control statutes, serving singular needs, allow a condition of separate control and over-lapping functions. This trend could result in an undetermined number of agencies with special jurisdictions, conceivably created and influenced by those over which that jurisdiction is imposed. No agency in this state now has the specific statutory direction to develop a pollution-abatement program covering pollution in reference to the whole state. The Sanitary Water Board seems to be the logical agency to administer a program of pollution control.

Recommendation I

The following statutes should be clarified as indicated in order that separate control and overlapping of functions may be eliminated, and in order that sufficient authority may be delegated to a single agency to effectively and equitably control water pollution in Illinois.

A. Stipulations in any and all statutes relating to pollution should be qualified to the extent that the Sanitary Water Board Act shall not be superseded.

B. The repeal of paragraph 61, Chapter 19, Rivers and Lakes Commission, approved June 10, 1911, amended by Act approved June 28, 1921 (Illinois Revised Statutes 1949, Smith-Hurd), concerning "Pollution of streams"), ". . . in relation to the regulations of the rivers, lakes and streams of the State of Illinois," under the jurisdiction of the Department of Public Works and Buildings.

C. A clarification of the powers vested in the Board of Trustees of River Conservancy Districts, Chapter 42, (Drainage, paragraph 403, Pollution of water supply-police force; paragraph 409, Duty to prevent pollution.) Sanitary Water Board or state stream pollution agency not to be superseded.

D. Delete from the Oil and Gas Act, references to pollution abatement activities —Chapter 104, paragraphs 62 and 67, and that the Sanitary Water Board is not to be superseded.

E. Delete from Chapter 127, State Government, paragraph 55-3, references concerning sewer systems and sewage treatment works, and considerations relative to filling or sealing abandoned water wells, and lakes for disposal of drainage in order to protect ground water from contamination.

  6. References to "sewage, wastes, and other substances."

  14. Qualify "sewage" that requirements by Sanitary Water Board shall not be superseded.

F. Delete from Chapter 127, State Government, paragraph 63a-6, Powers of Department of Conservation to prevent pollution added by legislature 1925.

G. All statutes concerning sanitary districts should be amended to substitute Sanitary Water Board when Department of Health is now mentioned and also qualified so that the Sanitary Water Board Act is not superseded.

H. Amend the Sanitary Water Board Law, Chapter 19, Paragraphs 129-145, to remove some of its present limitations and inadequacies, thereby make it more effective as an administrative operation.

★

Conclusion II

Study of Illinois water-pollution control operations indicates the need for a council of consultants whose membership adequately represents the various water uses, to formulate general policy and standards of enforcement, and to serve in an advisory capacity to the administrative agency charged with water-pollution abatement.

Discussion II

Effectiveness of the Sanitary Water Board as administrator of pollution-control statutes could be improved with representation from the geographic and economic interests affected by the problem. The various users of the public waters should be represented in the agency which will formulate and administer policy with regard to water-pollution control operations.

Recommendation II

An Illinois rivers pollution and development council should be formed. The most practical solution would be a council of consultants to the Sanitary Water Board consisting of representatives of industry, agriculture, public health, wildlife interests, those serving in the public interests, and of the legislature. This agency could be charged with formulation of over-all water-pollution control policy and standards of enforcement for the State of Illinois as well as to serve as an advisory body with respect to administration of water-pollution control statutes.

★

Conclusion III

Difficulty in financing municipal sewerage systems in Illinois has, in some instances, prevented the abatement of stream pollution. If an effective program of water-pollution control is to be established and maintained, revisions must be made in some of the statutes relating to the financing of municipal sewerage works.

Discussion III

The problems of financing waste-treatment works in the Illinois River basin are those of the whole state. Since financing often determines the extent of sewage treatment facilities, municipal financing legislation is a vital factor in the over-all pollution abatement program.

Growing inadequacy in the basic taxing powers of local governments has led to a complex tax situation which complies with the statute but actually circumvents statutory debt limitations. Fundamental changes in the law are needed to reach simple, adequate and equitable methods of financing. In addition, the more immediate considerations of economy and specific enabling legislation are suggested.

Recommendation III

The following legislative studies or changes relating to municipal financing should be undertaken:

A. Consider the establishment of state revolving funds to aid, on a loan basis, sewerage works construction by local governments.

Without water, industry cannot survive. By controlling its wastes, industry can make a major contribution to the conservation of its most essential resource.

B. Require, upon proper order to abate stream pollution, mandatory issuance of bonds by local governments for sewerage works construction.

C. Study means by which counties may finance sewerage and water works on an area basis.

D. Amend the Local Improvement Act to assure marketable bonds in special assessment financing. Simplify and clarify the procedure of making rebates on over-assessed properties.

E. Investigate the legal possibility of using general obligation bonds of a municipality (or sanitary district) as security for local special assessment bonds issued for sewerage extensions.

F. Assist municipalities and sanitary districts to clarify the legality of particular locality sewer revenue financing.

★

Conclusion IV

Sanitary districts are finding it increasingly more difficult to accomplish their function due to some of the financial limitations placed upon them. Also, it may be desirable in the public interest for them to expand their function beyond the limits presently imposed by statute.

Discussion IV

The 1917 Sanitary District Act, unchanged since its inception, limits the corporation tax to .083 percent of the assessed valuation. While this may be doubled by referendum, recent attempts to win such approval have not proved successful. Rising costs and this limit on taxation have resulted in pollution of Illinois streams through inability of sanitary districts to operate properly with existing facilities.

Industrial wastes constitute a large portion of the material treated by the facilities of some sanitary districts. In some instances, the treatment service is far in excess of taxes paid on assessed valuation. This could be corrected in a more equitable method of charging for services. Additionally, statutory changes would be needed to allow a sanitary district to assume control of a municipal sanitary sewer system within its boundaries — a situation recommended in some instances.

Recommendation IV

A. Enact legislation to permit sanitary districts to contract for rate charges in reasonable amounts, subject to adequate safeguards and limitations against excessive charges, with establishments producing wastes, which in strength, composition, or volume, require special or expensive treatment at district sewage-treatment works.

B. Permit sanitary districts to make purchases, without bids, up to $1,000.00.

C. Clarify the statutes to make it possible for a sanitary district, by agreement, to assume control of a municipal sanitary sewer system within its boundaries.

D. Make it possible for sanitary districts to use a public benefit fund.

E. Amend appropriate sections of the sanitary district laws to provide, commensurate with their responsibilities and duties, increased compensation to trustees.

★

Conclusion V

A complete initial survey should be made of the Illinois River and tributaries, with plans for its periodic continuation. Such a survey should include an investigation of all water uses and the effects of all sources of pollution, including silt.

Discussion V

While considerable progress has been made toward a solution of the water pollution problem of the Illinois River, certain phases of the over-all pollution problem need more attention. A comprehensive survey of all rivers, with an eye to the effects of pollution on water uses and the possible correction of unsatisfactory conditions, is highly desirable. Additional funds would have to be available to the various agencies qualified to conduct the various phases of this study.

Recommendation V

It is recommended that a comprehensive investigation of the Illinois River and tributaries be made for the purpose of securing data on which to equitably base further abatement action in relation to water usage. This investigation should be conducted by the Sanitary Water Board in conjunction with concurrent studies by related state governmental agencies. The Sanitary Water Board should act as the coordinating agency in the conduct of such investigation and in the pollutional interpretation of the findings.

Such a study would require an increased budget of the various agencies of the State of Illinois required to participate. Testimony of the suggested participating agencies indicated that their budgets should be increased by the indicated amounts.

A. Department of Conservation	$ 20,000.00
B. State Geological Survey	29,100.00
C. State Natural History Survey	56,269.50
D. State Water Survey	35,874.00
E. State Sanitary Water Board	100,000.00

Conclusion VI

After prolonged litigation on the question of the diversion of Lake Michigan water into the Illinois River, the Supreme Court of the United States reported in 281 US 696—State of Wisconsin et al vs. State of Illinois and Sanitary District of Chicago to which the following were parties—State of Wisconsin, State of Minnesota, State of Ohio, State of Pennsylvania, State of Michigan, State of New York vs. State of Illinois and Sanitary District of Chicago—determined that (Par. 3)—after December 31, 1938 diversion of water from the Great Lake will not be in excess of an annual average of 1500 cubic feet per second in addition to domestic pumpage; (Par. 5)—the progress of construction and a report of the diversion of water from Lake Michigan to be submitted to the clerk of the Supreme Court semi-annually. The decree of the Court limits the rate of diversion of Lake Michigan water into the Illinois River and is supervised by the U. S. Supreme Court and is enforcible by the contempt powers of the Supreme Court of the United States.

Discussion VI

The rate of diversion from Lake Michigan can be changed only by order of the U. S. Supreme Court. It is therefore beyond the jurisdiction of this Commission to make recommendations as to the need for more or less diversion of Lake Michigan water into the Illinois River.

Recommendation VI

The Commission having noted the effect of testimony and the difference of opinion as to the possible merit of diversion under varying circumstances in the future makes no recommendation with respect to a need for increased or decreased diversion.

Conclusion VII

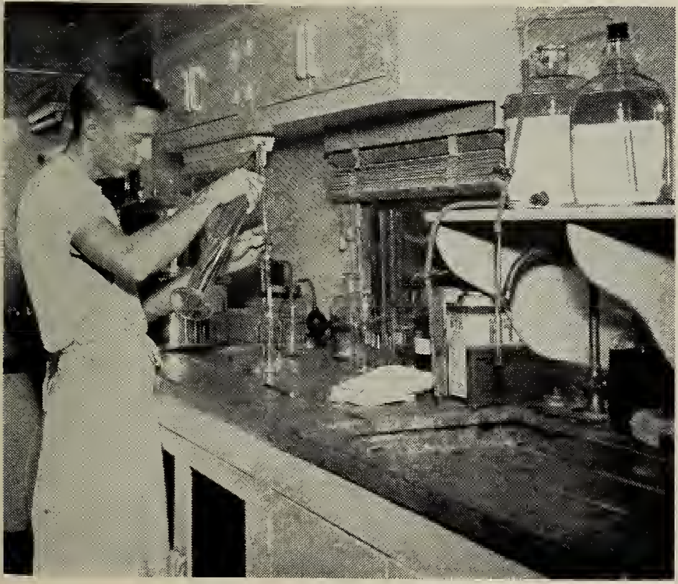
Additional items necessary of consideration in the formulation of a comprehensive and logical development program for the Illinois River Basin are:

A. Present U. S. tax laws do not provide for equitable consideration of waste treatment by industry and therefore effect an obstacle to stream pollution abatement.

B. Certain inconsistencies exist in the pollution abatement program for the Illlinois River Basin. Some municipalities have provided sewage-treatment facilities, while definite action authorized by the Sanitary Water Board Law has not been taken against other municipalities still discharging untreated wastes to the streams.

C. If an effective water-pollution control program is to be established in Illinois, sufficient personnel and facilities must be provided the responsible agency to allow them to accomplish this purpose.

D. If over-all development and management of the Illinois River is to be accomplished, considerations other than water-pollution control alone must be brought into the development program.



A member of the technical staff of the Mobile Laboratory unit analyzing water taken from the Illinois River.

Discussion VII

A proposal now before the U. S. Congress (H. R. 5089) would allow payments for industrial waste treatment works to be amortized at an accelerated rate for tax purposes. It is believed this would correct the present situation in which industry attempting to control the effect of its wastes on stream pollution is, in effect, penalized.

Vigorous action should now be taken against municipalities which are still discharging untreated human wastes into the waters of the Illinois River basin. Delay in providing complete treatment facilities for Chicago's sewage has accounted in part for the lack of such action, but it is inconsistent for a few municipalities to discharge untreated sewage to the streams when the majority have already provided treatment for their wastes.

Reasonable expenditures for the protection and conservation of our water resources are justified by their importance to health, agriculture, industry and recreation. Proposals for consolidation of all water-pollution control activities in the State Sanitary Water Board will entail higher expenses for that agency and require additional personnel and facilities if it is to discharge these duties effectively.

The report, "Survey and Report on Potential Conservation Areas Along the Illinois River as a Part of Flood Protection," submitted as part of the testimony of the Department of Conservation, is worthy of study in any overall development program for the Illinois River.

Recommendation VII

A. The Illinois legislature should memorialize the U. S. Congress to favorably consider H. R. 5089 introduced into the 56th Congress or a like measure introduced into a subsequent Congress.

B. Full action, as authorized by the Sanitary Water Board Law should be taken against all municipalities, industries, persons, firms, corporations, and institutions that are discharging raw or inadequately treated sewage or wastes to the Illinois River and tributaries.

C. Provide an appropriation to the Sanitary Water Board commensurate with the importance of the water-pollution control problem and sufficient for this agency to adequately meet the demands placed upon it in the endeavor to reach an equitable solution to the problem.

D. The "Survey and Report on Potential Conservation Areas Along the Illinois River as a Part of Flood Protection" is accepted and approved as part of this report.

The Commission wishes to say that this assignment has been a most important and challenging one—important because it involved one of our State's most important resources and challenging because of the intricate technical, legal, and financial phases which touch the life of every citizen.

Every effort has been made in this study to resolve the variety of problems into practical recommendations for solution. The growth and development of municipalities and industries is a progressive not a static procedure—the control of pollution must be likewise geared to meet ever-changing demands for water usages. Thus in presenting this report it is with the full realization that these recommendations cannot provide all the answers in the complex and ever-changing field of water-pollution control. If, however, as a result of this Commission's activities the waters of the Illinois River Basin are further restored for a fuller use, it will have served its purpose.

Signed:

Robert L. Burhans Arthur E. Larson

James Kerrigan Stanley J. Mondala

Ernie Giesler C. R. Ratcliffe

C. W. Klassen Cort Severns

Simon E. Lantz

Sanitation is a way of life. It is the quality of living that is expressed in the clean home, the clean farm, the clean business and industry, the clean neighborhood, the clean community. Being a way of life it must come from within the people; it is nourished by knowledge and grows as an obligation and an ideal in human relations.

UNIVERSITY OF ILLINOIS-URBANA
3 0112 041496040

SEAL OF THE STATE OF ILLINOIS
AUG. 26TH 1818